

## CLAIMS

1. A formulation based on the PTFE, homopolymer or modified, comprising:

1) latex of said PTFE having a particle diameter between 5 and 100 nm, comprising an anionic fluorinated surfactant in an amount in the range 2-25% by weight based on the PTFE, preferably 3-20% by weight;

2) a non ionic fluorinated surfactant added to the PTFE latex in an amount in the range 18-60% by weight based on the PTFE, preferably 25-45% by weight.

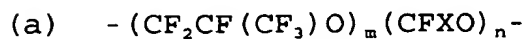
2. A formulation according to claim 1, wherein the anionic fluorinated surfactants are selected from:



wherein:  $X=F, CF_3$ ;  $M=H, NH_4, Na, Li, K$ ;

T is a  $C_1-C_3$  (per)fluoroalkyl group, optionally containing one Cl atom; preferably it is selected from  $-CF_3$ ,  $-C_2F_5$ ,  $-C_3F_7$ ,  $-CF_2Cl$ ,  $-C_2F_4Cl$ ,  $-C_3F_6Cl$ ; optionally one or two F atoms can be replaced by H;

$R_f$  is a (per)fluoropolyoxyalkylene radical having a number average molecular weight  $M_n$  in the range 200-2,000, preferably 350-1,000;  $R_f$  is selected in particular from the following classes:

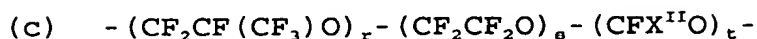


wherein m and n are integers such that the n/m ratio

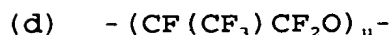
is in the range 0.01-0.5 and the molecular weight is in the above range;



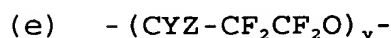
wherein p and q are integers such that the q/p ratio is in the range 0.5-2 and the molecular weight is in the above range;



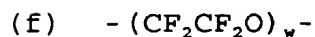
wherein r, s and t are integers such that r+s is in the range 1-50, the t/(r+s) ratio is in the range 0.01-0.05 and the molecular weight is in the above range;



wherein u is an integer such that the molecular weight is in the above range;



wherein Y and Z, equal to or different from each other, are F, Cl or H; v is a number such that the molecular weight is in the above range;



w is a number such that the molecular weight is in the above range.

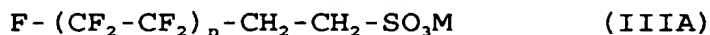
3. A formulation according to claim 2, wherein the anionic fluorinated surfactants (IA) are the compounds having  $R_f$  of type (a):



4. A formulation according to claims 1-3, wherein the compounds of formula (IA) are used in admixture with the following anionic surfactants:



wherein n can range between 4 and 12,



wherein M=H, NH<sub>4</sub>, Na, Li, K and n can range between 2 and 5.

5. A formulation according to claims 1-4, wherein the non ionic fluorinated surfactants added to the PTFE polymerization latex have the following structures:



wherein:

R<sub>f</sub> is selected from the structures (a), (b), (c), (d), (e), (f) of claim 2;

L is a divalent organic group, a linking group between R<sub>f</sub> and R<sub>h</sub>, selected from: -CO-NR<sup>1</sup>-, -CH<sub>2</sub>(OCH<sub>2</sub>CHR<sup>2</sup>)<sub>a</sub>-O-,

-CH<sub>2</sub>(OCH<sub>2</sub>CHR<sup>2</sup>)<sub>b</sub>-O-CO-, -CH<sub>2</sub>O-(CH<sub>2</sub>)<sub>c</sub>-CO-O-, -CH<sub>2</sub>-CH<sub>2</sub>-O-,

-CH<sub>2</sub>-CH<sub>2</sub>-; wherein R<sup>1</sup> is -H or a C<sub>1</sub>-C<sub>4</sub> alkyl; R<sup>2</sup> is -H or a C<sub>1</sub>-C<sub>2</sub> alkyl; a, b are numbers from 0 to 6, preferably from 0 to 2; c is a number from 1 to 3;

R<sub>h</sub> is a radical having a polyoxyalkylene structure sele-

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 stated from:

- (i)  $-(\text{CH}_2\text{CH}_2\text{O})_q\text{CH}_2\text{CH}_2\text{Z}$ , wherein:  $q$  is an integer from 5 to 70, preferably from 6 to 25;  $\text{Z}$  is selected from  $-\text{OH}$ ,  $\text{C}_1\text{-C}_4$  alkoxy;
- (ii)  $-(\text{CH}_2\text{CH}_2\text{O})_r(\text{CH}_2\text{CH}(\text{CH}_3)\text{O})_s\text{CH}_2\text{CHR}^3\text{Z}$ , wherein  $r+s$  is an integer from 5 to 70, preferably from 10 to 50; the  $r/s$  ratio is in the range 0.1-10, preferably 0.5-5;  $\text{R}^3$  is selected between  $-\text{H}$  and  $-\text{CH}_3$ ;  $\text{Z}$  is selected between  $-\text{OH}$ ,  $\text{C}_1\text{-C}_4$  alkoxy;

6. A formulation according to claim 5, wherein the non ionic surfactants are:

- the compounds of structure (IB) with  $y=5$ ,  $\text{L}=-\text{CH}_2-\text{CH}_2-\text{O}-$ ,  $\text{R}_h=-(\text{CH}_2\text{CH}_2\text{O})_q\text{CH}_2\text{CH}_2\text{OH}$  wherein  $q=6$ ;
- the compounds of structure (IIB) having  $\text{R}_f$  of structure (a) with  $\text{T}=-\text{C}_3\text{F}_6\text{Cl}$ ,  $m$  and  $n$  such to give a molecular weight in the range 450-650;  $\text{L}=-\text{CONH}-$ ;  $\text{R}_h=-(\text{CH}_2\text{CH}_2\text{O})_q\text{CH}_2\text{CH}_2\text{OCH}_3$  wherein  $q=21$ .

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 7. A formulation according to claims 1-6, wherein the PTFE is modified with one or more comonomers containing at least one unsaturation of ethylene type in an amount up to 6% molar, preferably up to 1% molar.

8. A formulation according to claim 7, wherein the comonomers are of both hydrogenated and fluorinated type.

9. A formulation according to claim 8, wherein the hydroge-

nated comonomers are selected from ethylene, propylene, acrylic monomers, styrene monomers.

10. A formulation according to claim 8, wherein the fluorinated comonomers are selected from:

- $C_3-C_8$  perfluoroolefins;
- $C_2-C_8$  hydrogenated fluoroolefins, such as vinyl fluoride (VF), vinylidene fluoride (VDF), trifluoroethylene, hexafluoroisobutene, perfluoroalkylethylene  $CH_2=CH-R_f$ , wherein  $R_f$  is a  $C_1-C_6$  perfluoroalkyl;
- $C_2-C_8$  chloro- and/or bromo- and/or iodo-fluoroolefins;
- $CF_2=CFOR_f$  (per)fluoroalkylvinylethers (PAVE), wherein  $R_f$  is a  $C_1-C_6$  (per)fluoroalkyl;
- $CF_2=CFOX$  (per)fluoro-oxyalkylvinylethers, wherein X is: a  $C_1-C_{12}$  alkyl, or a  $C_1-C_{12}$  oxyalkyl, or a  $C_1-C_{12}$  (per)fluoro-oxyalkyl having one or more ether groups; fluorodioxoles, preferably perfluorodioxoles.

11. A formulation according to claim 10, wherein the fluorinated comonomers are perfluoromethoxydioxole (MDO), perfluoropropylvinylether (PPVE), perfluoromethylvinylether (PMVE) and perfluoropropene (PFP).

12. Dielectric films obtained from the formulation according to claims 1-11, by the deposition of the formulation on

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